

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1 to 20. (cancelled)

Claim 21. (previously presented) A coated product comprising:

a substrate;

a film sputtered from a metal cathode target in an atmosphere comprising inert gas and reactive gas, the metal in the metal cathode target having a reactive gas switch point, wherein the concentration of the reactive gas during sputtering is below the reactive gas switch point such that the metal target is sputtered in a metallic mode to deposit a metal film having an amorphous structure defined as an amorphous metal film; and

a metal oxide film over the amorphous metal film.

Claim 22. (previously presented) The product in accordance with claim 21, wherein the metal of the metal cathode target is selected from titanium, zirconium, tantalum, hafnium, niobium, vanadium and mixtures thereof.

Claim 23. (previously presented) The product in accordance with claim 22, wherein the metal of the metal cathode target is selected from titanium and zirconium.

Claim 24. (previously presented) The product in accordance with claim 23, wherein the metal of the metal cathode target is titanium.

Claim 25. (previously presented) The product in accordance with claim 21, wherein the metal film has a thickness ranging from 100 Å to 1500 Å.

Claim 26. (previously presented) The product in accordance with claim 25, wherein the metal film has a thickness ranging from 200 Å to 700 Å.

Claim 27. (previously presented) The product in accordance with claim 21, wherein the reactive gas is selected from oxygen, nitrogen and mixtures thereof.

Claim 28. (previously presented) The product in accordance with claim 27, wherein the reactive gas is oxygen.

Claim 29. (previously presented) The product in accordance with claim 27, wherein the inert gas is argon.

Claim 30. (previously presented) The product in accordance with claim 21, wherein the inert gas is argon.

Claim 31. (previously presented) The product in accordance with claim 30, wherein the reactive gas is oxygen.

Claim 32. (previously presented) The product in accordance with claim 31, wherein the substrate is glass, the metal in the metal film is titanium.

Claim 33. (previously presented) The product in accordance with claim 31, wherein the atmosphere comprises argon and up to 30 percent oxygen.

Claim 34. (previously presented) The product in accordance with claim 33, wherein the atmosphere comprises 2 to 15 percent oxygen.

Claim 35. (previously presented) The product in accordance with claim 21, wherein the substrate is glass.

Claim 36.(currently amended) The product in accordance with claim 51 21 wherein the essentially amorphous metal film is thermally oxidized.

Claim 37. (currently amended) The product in accordance with claim 36, wherein the essentially amorphous metal film is heated to at least 400°C.

Claim 38. (currently amended) The product in accordance with claim 4836, wherein the metal oxide film is defined as a first metal oxide film and the essentially amorphous metal film is oxidized to provide the first metal oxide film, and further comprising a metal oxide film defined as a second metal oxide film deposited on the essentially amorphous metal film prior to thermal oxidation of the essentially amorphous metal film.

Claim 39. (currently amended) The product in accordance with claim 38, wherein the second metal oxide film deposited over the metal film has a thickness ranging from 40A to 120A.

Claim 40. (currently amended) The product in accordance with claim 38, wherein the substrate is glass, the metal in each of the first and second metal oxide films is titanium, the density of the first metal oxide film deposited over the metal film is 4 grams per cubic centimeter and the refractive index of the first metal oxide film is 2.5.

Claim 41. (currently amended) The product in accordance with claim 38, wherein the metal in each of the first and second metal oxide films is independently selected from titanium, zirconium, tantalum, hafnium, niobium, vanadium and mixtures thereof.

Claim 42. (currently amended) The product in accordance with claim 41, wherein the metal in each of the first and second metal oxide films is independently selected from titanium and zirconium.

Claim 43. (previously presented) A coated article comprising a glass substrate, a first titanium oxide film formed by thermally oxidizing an amorphous sputtered titanium metal film deposited from a titanium metal

cathode target in an atmosphere comprising argon and oxygen below a reactive switch point of the titanium metal cathode target, and a second titanium oxide film deposited over the first titanium oxide film.

Claim 44. (previously presented) Product in accordance with claim 21, wherein the metal oxide film is comprised of the same metal as the underlying amorphous metal layer.

Claim 45. (previously presented) Product in accordance with claim 21, wherein the metal oxide film, is comprised of reactively sputtered amorphous metal oxide to increase the thermal stability of the amorphous metal film.

Claim 46. (previously presented) Product in accordance with claim 21, wherein the metal oxide film has a thickness of 40 to 120 Angstroms.

Claim 47. (previously presented) The product in accordance with claim 21, wherein the amorphous metal layer is harder and less dense than a crystalline metal film sputtered in pure argon and the lower density enhances the rate of oxidation so that the amorphous metal film may be thoroughly oxidized at lower temperatures or in shorter times than required for oxidation of crystalline metal film.

Claim 48. (previously presented) A coated product comprising:
a substrate; and
a metal oxide film from oxidation of an essentially amorphous metal film sputtered from a metal cathode target in an atmosphere comprising inert gas and reactive gas, the metal in the metal cathode target having a reactive gas switch point, wherein the concentration of the reactive gas during sputtering is below the reactive gas switch point such that the metal target is sputtered in a metallic mode to deposit a metal film having an amorphous structure.

Claim 49. (previously presented) Product in accordance with claim 47, wherein oxidation is by thermal oxidation.

Claim 50. (currently amended) Product in accordance with claim 4847, wherein the metal oxide film is comprised of crystalline metal oxide.

Claim 51. (previously presented) A coated product comprising:

a substrate; and

a metal oxide film comprised of crystalline metal oxide from oxidation of an essentially amorphous metal film sputtered from a metal cathode target in an atmosphere comprising inert gas and reactive gas, the metal in the metal cathode target having a reactive gas switch point, wherein the concentration of the reactive gas during sputtering is below the reactive gas switch point such that the metal target is sputtered in a metallic mode to deposit a metal film having an amorphous structure; and

a metal oxide film over the crystalline metal oxide film, where the metal oxide film is deposited by reactive sputtering of amorphous metal oxide over the amorphous metal film.

Claim 52. (currently amended) The coated product of Claim 50, wherein the crystallized metal oxide film is a titanium oxide film with a crystalline structure having a density greater than 3.4 g/cm³.